

SECTION V.—SEISMOLOGY.

THE SOUTHERN APPALACHIAN EARTHQUAKE OF FEBRUARY 21, 1916.

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On February 21, 1916, about 6:40 p. m., 75th M. time, an earthquake occurred in the Appalachian Mountains of western North Carolina that was distinctly felt not only in various parts of that State but also in South Carolina, Georgia, Alabama, Tennessee, Kentucky, Virginia, and, presumably, in West Virginia. The various places from which reports of this quake were received and the corresponding intensities, as estimated by the observers, are given on the accompanying chart. Most of these reports were published in detail in the REVIEW for February, 1916.

The last earthquake of note that occurred in this general region was on January 1, 1913,¹ with the epicenter near Union, S. C. While this earthquake had a higher intensity than the one under discussion, yet the area affected was only approximately one-fifth as great. On October 29, 1915, an earthquake with an intensity of IV, Rossi-Forel, was felt in Buncombe County, N. C., the same county in which the one of February 21 was the most severe, but reported only from Asheville and its immediate vicinity. Earthquakes are not uncommon in the southern Appalachians; indeed, scarcely a year passes without one or more being felt somewhere in this region.

According to scattered reports the epicenter of the earthquake of February 21 was near Skyland, N. C., lat. 35° 30' N., long. 82° 30' W., where an intensity of VI, Rossi-Forel, was reported. The area over which this quake was felt, elliptical in shape, with the longer axis in a NE.-SW. direction, exceeded 200,000 square miles. The most distant point from the epicenter (assumed to be at Skyland, N. C.), to report feeling the shock is Norfolk, Va., 365 miles away. Instrumentally the quake was recorded at Harvard University, 1,250 miles away; Canisius College, Buffalo; University of Kansas, Lawrence; St. Louis University, St. Louis; Georgetown University, and the Weather Bureau, Washington, D. C.

The time of the disturbance, as given by a majority of the observers, whose reports show a surprisingly close agreement, was approximately 6:40 p. m., eastern time. Mr. M. L. Church, of Marshall, N. C., about 25 miles from the epicenter, gives the time of ending as 6^h 39^m 45^s, and

from his estimated duration places the beginning at 6^h 39^m 15-30^s. These values are quite reliable, as the error of Mr. Church's watch was obtained by telegraph within five minutes after the disturbance. The times of beginning at the epicenter, as determined respectively from the seismograph records of Harvard University, Georgetown University, and the Weather Bureau by means of the P-O and S-O tables of Dr. Klotz, were substantially the same and averaged 6^h 39^m 17^s.

Of course, consistent reports as to intensity could not be expected, owing to occupation of observer, nature and intensity of artificial disturbances, errors of estimation, and many other factors. Hence the isoseismals on the accompanying chart are only relative and drawn to the average values of intensity.

Sounds were quite uniformly reported within the territory bounded by the IV isoseismal. Within a radius of 200 miles from the epicenter, approximately that of the III isoseismal, rattling of dishes and windows was noted. Several stated that it was the most severe quake they had experienced since the Charleston earthquake of August 31, 1886. Crockery and other utensils fell from shelves in several cities. Near Sevierville, Tenn., a team of horses became frightened and ran away, tearing up a buggy, while in the town bricks were shaken from chimneys. Near the same place, in Wears Valley, several springs increased in volume, some running muddy—a common earthquake phenomenon. A few observers reported the cracking of plaster. People became alarmed at several places within the territory bounded by the V isoseismal and rushed from their homes, but no damage of consequence occurred anywhere.

The data used in this note were assembled by Mr. R. H. Finch, who deserves much credit for his careful attention to the details of the seismological reports.

AN EARTHQUAKE OBSERVED WITH A TELESCOPE.

Mr. Wendell P. Hoge, of the Mount Wilson Solar Observatory, observed the earthquake of March 22 (see below, Table 1, California), in an interesting and unusual way. The following is from a card report rendered by Mr. Hoge:

This disturbance noticed while watching star image in 60-inch telescope, using high-power eyepiece. Oscillations of star image in the field rapid and short at first, becoming more marked in the middle and diminishing at the end of the disturbance. Evidently a very faint shock. Mr. G. A. Monk, using the instrument a little later at 4:50 and at 4:56 a. m., noticed two very feeble oscillations.

¹ Taber, Stephen, in Bull. Sels. Soc. Amer., March, 1913, 3, No. 2, pp. 6-13.